

MATERIALS TOWARD A MONOGRAPH OF THE GENUS PSEUDOCARPIDIUM. II

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PSEUDOCARPIDIUM PUNGENS Britton

The type of this little-known species was collected by Nathaniel Lord Britton (no. 1992) on a hillside near Guatanamo, Oriente, Cuba, between March 19 and 31, 1909, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is known only from the type collection, which is in fruit. Britton cites N. Taylor 19 as an additional example of this species, but Taylor's plant is P. avicennioides (A. Rich.) Millsp., a closely related species. Three herbarium specimens, including the type, have been examined.

Citations: CUBA: Oriente: N. L. Britton 1992 (N--type, N--isotype, N--isotype).

PSEUDOCARPIDIUM RIGENS (Griseb.) Britton, Bull. Torrey Bot. Club 39: 10. 1912.

Synonymy: Vitex rigens Griseb., Cat. Pl. Cub. 216. 1866.

Literature: Griseb., Cat. Pl. Cub. 216--217. 1866; Jacks., Ind. Kew. 2: 1214. 1895; N. L. Britton, Bull. Torrey Bot. Club 39: 10. 1912; Prain, Ind. Kew. Suppl. 5: 209. 1921; Moldenke, Geogr. Distrib. Avicenn. 6. 1939; Moldenke, Prelim. Alph. List Invalid Names 52. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 25 & 99. 1942; Moldenke, Alph. List Invalid Names 55. 1942; Moldenke, Alph. List Cit. 1: 184 & 185 (1946), 3: 929 (1949), and 4: 1144. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 45 & 195. 1949; Roig, Dicc. Bot. 1: 301--302 and 2: 1115. 1953; Moldenke, Phytologia 5: 152. 1955; Alain in León & Alain, Fl. Cuba 4: 314, 316, & 545. 1957; Moldenke, Résumé 53, 388, & 468. 1959.

Shrub or low tree, to 3.5 m. tall; branches and branchlets medium-slender, not very twiggy, rather obtusely tetragonal, rather stiff, gray or whitish, glabrous; twigs brownish, slender; nodes obscurely annulate when young, not annulate in age; leaf-scars somewhat prominent and corky; principal internodes 0.3--3.8 cm. long; leaves decussate-opposite, often crowded on the young twigs and absent from the older wood, simple; petioles slender, 1--5 mm. long, glabrate, flattened and more or less canaliculate above, not noticeably ampliate at the base; leaf-blades coriaceous, rather uniformly light-green and very shiny and glossy on both surfaces, sometimes darker green above (chartaceous and nigrescent in drying when very immature), oblanceolate or narrowly obovate, varying to narrowly elliptic or oblong, 1.2--4 cm. long, 0.5--1.8 cm. wide, obtusely or bluntly subacute at the apex in outline, acute or cuneate at the base, spinulose-dentate toward and at the apex or sometimes almost to the base, rarely entire except for the spinulose apex, rarely somewhat asymmetric-

ally 1- or 2-lobed toward the apex, perfectly glabrous on both surfaces, often decidedly revolute; midrib slender, mostly impressed above, prominent beneath; secondaries very slender, 4--8 per side, spreading at almost right angles from the midrib, not arcuate, not anastomosing, usually very obscure or even indiscernible on both surfaces; vein and veinlet reticulation very fine, mostly obscure or very slightly prominent above, mostly obscure or indiscernible beneath; inflorescence axillary, paniculate, very slender and lax, 4--14.5 cm. long, 1--2 cm. wide, composed of 2--7 pairs of 1--3-flowered cymules and a terminal one, glabrous throughout; peduncles very slender, 2.5--5 cm. long, brownish; rachis similar to the peduncles in all respects but even more slender or filiform, its sympodia usually elongate; pedicels filiform, 1--3 mm. long, glabrous, brown; bracts mostly none or sometimes a few present in the lowest parts of the panicle, leaf-like but smaller, long-stipitate; bractlets numerous, one pair subtending each pair of inflorescence-branches, narrow-lanceolate or -oblanceolate, subsessile, 2--4 mm. long, about 1 mm. wide, glabrous, the uppermost ones still smaller and linear; prophylla minute, linear-setaceous, about 1 mm. long, sharply acute; corolla blue or blue-purple; fruiting-calyx somewhat incrassate, shallowly cupuliform, about 3 mm. long and 4.5 mm. wide, flaring, glabrous, its rim deeply and often irregularly 5-lobed, usually not split even under the mature fruit, scarious-margined; fruit flattened, obovate, about 5 mm. long and 7--8 mm. wide, 4-lobed with shallow rounded lobes, acute at the base, glabrous.

The type of this distinctive species was collected by Charles Wright (no. 3181) on the road to Pinal, Mayari, Cuba, on August 4 of a year between 1860 and 1864. The type collection is abundantly infested with a fungus on the branchlets, twigs, and sometimes the leaves. Shafer 3104 has the under surface of the leaves infested with another fungus. Acuffa 13331 has the leaf-blades very spiny over their whole margins.

The species inhabits thickets, rocky serpentine hillsides, and charrascales, ascending to 600 meters altitude in the Sierra Nipe. It has been collected in anthesis from April through August, and in fruit in July and December. Common names recorded for it are "chicharroncillo de costa", "chicharron de costa", and "copalillo". The last-mentioned of these names is also applied to Casearia bahamensis Urb. of the Flacourtiaceae and to Thouinia nervosa Griseb. of the Sapindaceae. In all, 39 herbarium specimens, including the type collection, and 2 mounted photographs have been examined.

Citations: CUBA: Oriente: Acuffa 13331 (Es, N), 13332 (Es, N); Carabia 3581 (Ha, N); Clemente 4957 (N); Ekman 2014 (B, N, N--photo, S, Z--photo), 6001 (S); R. A. Howard 6218 (Mu--47665, N, N); León 20388 (N); León & Alain 19277 (Ha, N), 19322 (Ha, N), 20388 (Ha, N); León & Clemente 20388 (Ha); Shafer 3104 (B, K, N, N, N, W--696247). Province undetermined: C. Wright 3181 [1860--

1864; Herb. Sauvalle 1788/1] (B—*isotype*, Bm—*isotype*, Cb—*isotype*, E—116118—*isotype*, G—*isotype*, Hv—*isotype*, Hv—*isotype*, K—*isotype*, Os—*isotype*, P—*isotype*, X—*isotype*).

PSEUDOCARPIDIUM SHAFERI Britton, Mem. Torrey Bot. Club 16: 98. 1920.

Synonymy: *Vitex shaferi* Britton ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940.

Literature: N. L. Britton, Mem. Torrey Bot. Club 16: 98. 1920; Hill, Ind. Kew. Suppl. 6: 167. 1926; Moldenke, Geogr. Distrib. Avicenn. 6. 1939; Moldenke, Prelim. Alph. List Invalid Names 52. 1940; Moldenke, Alph. List Invalid Names 55. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 25 & 99. 1942; H. N. & A. L. Moldenke, Pl. Life 2: 83. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 45 & 195. 1949; Moldenke, Alph. List Cit. 3: 929. 1949; Alain in León & Alain, Fl. Cuba 4: 314, 316, & 545. 1957; Moldenke, Résumé 53, 389, & 468. 1959.

Shrub or small tree, to 4 m. tall; branches and branchlets medium-stout, stiff and rigid, woody, with very small circular pith, very twiggy, light-gray, minutely puberulous, soon becoming glabrate, subterete or but slightly and obscurely tetragonal; twigs very numerous, short, decussate-opposite, densely short-pubescent or tomentulose with whitish hairs, not noticeably resinous-pulverulent, becoming glabrescent in age; nodes very obscurely annulate or not annulate; internodes on branches 0.5—2.5 cm. long, on twigs greatly abbreviated or almost obsolete; leaf-scars on twigs and branchlets corky and elevated; leaves decussate-opposite, simple, mostly crowded on only the twigs; petioles very slender, 1—3 mm. long, densely short-pubescent or tomentulose like the young twigs, not noticeably ampliate at the base, not jointed; leaf-blades coriaceous, mostly decidedly revolute, very dark-green above, whitish beneath, oblong or oblong-lanceolate, varying to narrowly elliptic, 1.5—3.7 cm. long, 4—12 mm. wide, acute and spinulose-tipped at the apex, subcuneate at the base, entire or rarely with 1 or 2 spinulose teeth along the margins, often revolute, glabrous and shiny above, densely whitish-tomentulose beneath, not resinous-pulverulent; midrib slender, deeply impressed above, very prominent beneath; secondaries very slender and short, 8—12 per side, close together, impressed or obscure above (often not discernible), prominulent beneath, spreading almost at right angles from the midrib, not arcuate, usually not ascending, conspicuously anastomosing to form a rather uniform collective vein very close to the margins beneath; vein and veinlet reticulation very fine and delicate, prominulent to the smallest divisions (under a hand-lens) above, only the larger portions prominulent beneath, the rest more or less hidden by the tomentum; inflorescence axillary, sparse, paniculate, 2—4 cm. long, 1—1.5 cm. wide, composed of 1 or 2 pairs of about 3-flowered cymes and a terminal one, rather densely puberulent with whitish hairs throughout; peduncles filiform, 1—1.7 cm. long, whitish-puberulent; rachis similar to the peduncle, its sympodia 4—7 mm. long; bracts none; bractlets linear, 2—3 mm.

long, puberulent; prophylla minute, setaceous-subulate; pedicels filiform, 1—2 mm. long, whitish-puberulent; calyx campanulate, about 2 mm. long and wide (at the apex), densely whitish-puberulent outside, glabrous within, its rim conspicuously 5-toothed with ovate-triangular, equal, sharply acute teeth or lobes; corolla blue, about 5 mm. long, puberulent; fruiting-calyx persistent, not much enlarged, patelliform, usually not split, 2—3 mm. wide, puberulent outside, glabrous within, taking with it a slight core (about 1 mm. long) upon being removed from the base of the fruit, its rim deeply 5-toothed with triangular, sharply acute, more or less uniform teeth; fruit conspicuously depressed flattened, 3—4 mm. long, 4—8 mm. wide, deeply 4-lobed, the lobes equal or at maturity 2 much larger than the others, all rounded, densely short-pubescent throughout, the base deeply umbilicate when the fruiting-calyx is removed.

The type of this species was collected by John Adolf Shafer (no. 7901) — in whose honor it is named — in coastal thickets between Sabana and Maisi, Oriente, Cuba, on December 13, 1910, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is found also on limestone rocks, ascending to 15 meters altitude. The old bark is attacked by a superficial fungus similar to the one seen on P. wrightii Millsp. It has been collected in fruit in July, in flower in December, and has been confused in herbaria with P. avicennioides (A. Rich.) Millsp. In all, 15 herbarium specimens, including the type, have been examined.

Citations: CUBA: Oriente: Acuña & Díaz Barreto 17354 (Es); Bermúdez s.n. [León 16270] (Ha, N), s.n. [León 16283] (Ha, N); León 17114 (Ha, N), 18258 (Ha, N), 18367 (Ha, N); León & Seifriz 18258 (N); Shafer 7901 (N--type, N--isotype, N--isotype).

PSEUDOCARPIDIUM WRIGHTII Millsp., Field Columb. Mus. Publ. Bot. 2: 182. 1906.

Synonymy: Vitex wrightii (Millsp.) Urb. ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940. Vitex avicennioides Griseb. ex Alain in León & Alain, Fl. Cuba 4: 316, in syn. 1957 [not V. avicennioides A. Rich., 1850].

Literature: Millsp., Field Columb. Mus. Publ. Bot. 2: 182. 1906; Prain, Ind. Kew. Suppl. 4: 192; 1913; Britton & Millsp., Bahama Fl. 374. 1920; Moldenke, Alph. List Common Names 8. 1939; Moldenke, Geogr. Distrib. Avicenn. 4 & 6. 1939; Moldenke, Suppl. List Common Names 24. 1940; Moldenke, Prelim. Alph. List Invalid Names 52. 1940; Carabia, Chron. Bot. 6: 227. 1941; Moldenke, Alph. List Invalid Names 56. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 24, 25, & 99. 1942; Moldenke, Phytologia 2: 111. 1944; Moldenke, Alph. List Cit. 1: 55, 63, 64, 74, 120, 184--188, 298, & 309 (1946) and 2: 578, 646, & 650. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 90. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 42, 45, & 195. 1949; Moldenke, Alph. List Cit. 3: 773, 868, 895, 927, 928, 930, & 943



(1949) and 4: 1127 & 1144. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 11. 1949; Roig, Dicc. Bot. 1: 427--428 & 695 and 2: 1087. 1953; Alain in León & Alain, Fl. Cuba 4: 314, 316, & 545. 1957; Moldenke, Résumé 50, 53, 54, 381, 389, 391, & 468. 1959.

Shrub or low slender or straggling tree, to 6 m. tall, often branched from the base; branches and branchlets medium-stout, rigid and stiff, gray or almost white or silvery in age, minutely puberulent, glabrescent in age, woody, with a very slender pith, obscurely tetragonal or subterete; twigs rather slender, more conspicuously tetragonal and densely short-puberulent, the puberulence flavescent or brunneous and usually interspersed with tiny resinous globules; older nodes not annulate, younger ones often more or less annulate with a slightly prominent ridge, not compressed nor ampliate; principal internodes 0.5--2.5 cm. long (or to 7.3 cm. long on vigorous shoots), very much abbreviated on twigs and younger branchlets; leaf-scars usually comparatively large and prominently elevated on the twigs and younger branchlets; leaves decussate-opposite, simple, often crowded on the young twigs; petioles very slender, not jointed, 2--7 mm. long, short-puberulent, the puberulence interspersed with tiny resinous globules, slightly ampliate at the base; leaf-blades coriaceous, very dark-green and shiny above, somewhat lighter and subnitid beneath, often more or less revolute, elliptic (rarely obovate and cuneately narrowed to the base), varying to ovate-lanceolate or orbicular, 1.5--9.3 cm. long, 0.8--5 cm. wide, varying from rounded or obtuse to subacute or rarely emarginate at the apex, broadly rounded or subcordate (varying to conspicuously cordate) at the base, usually sinuate and abundantly spinulose along the margins from the apex to almost the base with small, rather uniform, acute, and often revolute-margined teeth surmounted by a slender and sharp spine 1--1.5 mm. long (sometimes sparsely or irregularly so, rarely entire when very young), glabrous and very shiny above, glabrous or subglabrate throughout beneath or finely and sparsely puberulent (especially on the venation) and pulverulent, the puberulence interspersed with tiny resinous globules; midrib slender, usually subimpressed above, prominent beneath; secondaries 6--10 per side, spreading, irregular, slightly ascending or sometimes arcuate, slightly prominulent above, conspicuously so beneath, often anastomosing near the margins; vein and veinlet reticulation very abundant and fine, usually conspicuously prominulent above, obscure or only the larger parts prominulent (usually near the margins only); inflorescence axillary, paniculate, 4.5--16 cm. long, 2.5--6.5 cm. wide, usually composed of about 4 pairs of cymes and a terminal cymule, sometimes more abbreviated and compact, bracteolate, often bracteate at the base, densely resinous-puberulent and short-puberulent throughout, its branches very slender, divergent-ascending; peduncles 2.8--6.1 cm. long, very slender, densely short-puberulent; rachis similar to the peduncle, the sympodia 1--2.5 cm. long; pedicels filiform, 1--2 mm. long, densely puberulent; bracts usually only 1 pair, sub-

tending the lowest pair of cymes in each panicle, foliaceous, elliptic, 1—1.5 cm. long, 5—8 mm. wide, rather long-stipitate, similar to the leaves as to margin, puberulence, and venation; bractlets linear, numerous, 2—5 mm. long; prophylla minute, linear or setaceous, puberulent; corolla blue or deep-blue; fruiting calyx membranous, usually split into 2 halves on maturity of the fruit, the halves persistent, puberulent, the rim of each half conspicuously 2- or 3-toothed with broadly triangular acute teeth; fruit "greenish-yellow", flattened, broadly 4-lobed with 4 equal or subequal lobes (2 lobes often somewhat larger than the others), 3—4 mm. long, 8—9 mm. wide, densely puberulent throughout with flavescent hairs, interspersed with tiny resinous globules.

The type of this species, which is also the type of the genus, was collected by John Isaiah and Alice Bell Northrop (no. 625) along Fresh Creek, Andros island, Bahamas, on June 6, 1890, and is deposited in the herbarium of the Chicago Natural History Museum. It is named in honor of Charles Wright, whose collections have contributed so much to our knowledge of the flora of Cuba, the Dominican Republic, Mexico, Nicaragua, Texas, New Mexico, Arizona, the Bonin Islands, Australia, the Behring Sea, the Liukiu Islands, Hongkong, South Africa, and other parts of the world.

The species is said to inhabit low woods, mountain summits, limestone cliffs, dry black probably inundated loam, eruptive rock soil, woods and thickets, seroentine hills, hillsides, rocky soil, the edge of arroyos, rock outcrops, creek margins, and carrascales. It has been collected in anthesis from March to October, and in fruit in February, April, June to August, October, and November. It is usually a shrub 1 to 4 meters tall. The leaf-blades are chartaceous and nigrescent in drying when very immature. A piece of the bark of the trunk is preserved on Shafer 2467 in the Britton Herbarium. Wight reports the flowers to be "the color and odor of English violets [Viola odorata L.], a light-yellow semicircle on the large petal. Leaves with resinous odor. Bark gray, shredded". Britton & Cowell report that "the middle lobe of the lower lip much larger than the lateral ones." The old bark is abundantly attacked by a superficial fungus forming black lines. Species of Tillandsia and Dendropogon are also very often found on its branches. Combs describes it as "a low ragged tree (10 ft.), much branched, in savannahs, rare". On the stems of living plants have been found heavy infestations of what appears to be the fungus Myrangium duriae Mont. & Berk.

Vernacular names include "chicharrón", "granadillo de costa", "granadilla de Cuba", "granadillo macho", "negracuba espinosa", and "Wright's pseudocarpidium". The first-mentioned of these names is also applied to P. multident (Urb.) Moldenke. Herbarium material of the species has been misidentified as Vitex ilicifolia Rich., V. shaferi Britton, and Ouratea sp.

B. L. Robinson says "Examination of material at hand fails to confirm the constancy of the characters cited by Dr. Millspaugh for this species" and he unites it with P. ilicifolium, and com-

bines the genus with Vitex. However, Robinson had no material of the fruit of Pseudocarpidium at hand when he made this comment. Had he seen the fruit, I am sure he would have confirmed Millspaugh's findings, as I have. In all, 154 herbarium specimens, including the type, and 5 photographs have been examined.

Citations: BAHAMAS: Brace 4933 (F--183666, F--199966, G, N, W--655508), 5329 (F--200321, N); O. Bryant 2 (F--183666, G); Northrop & Northrop 625 (A--isotype, B--isotype, B--isotype, B--photo of type, B--photo of type, C--isotype, F--181663--fragment & description of type, F--130709--type, F--photo of type, G--isotype, K--isotype, X--isotype); Small & Carter 8582 (F--283601, G, K, N, P, W--758010); A. E. Wight 261 (B, F--183672, F--225452, G, K, N). CUBA: Camaguey: Acuffa & Rodriguez 16309 (Es); Britton, Britton, & Cowell 13239 (N); Roig, Luaces, & Arango 6086 (Es, Es); Shafer 561 (B, F--284468, G, N, W--659187), 2467 (F--251002, G, N, P, W--848708). Havana: Ekman 1002 (B, N, S), 1222 (B, N, N--photo, S, Z--photo), 16527 (B, S), 16895 (B, S), s.n. [León 18549] (Ha); León 5194 (Ha, N), 5215 (Ha, N), 7163 (Ha); León & Césane 8955 (N); Moldenke & Moldenke 19863 (Es, Lg, N, Sm); Roig & León 8220 (Es); Sauvalle s.n. [Guanabacoa] (N); Shafer 74 (Cm, F--181661, N), s.n. [Madruga, April 1903] (Es). Las Villas: Alain 2832 (Z); Britton, Britton, & Cowell 10200 (K); Britton, Britton, & Wilson 6067 (N, W--658790); Britton & Cowell 10200 (B, G, N, W--696115), 13291 (B, N, N--fungus, W--698425); Combs 239 (B, E--116170, F--16876, F--358042, G, Io--15691, K, Ka--61225, N); Ekman 18818 (B, S); Hodge & Howard 5027 (N); R. A. Howard 5027 (N); Howard, Briggs, Kamb, Lane, & Ritland 115 (N); J. G. Jack 5130 (A, Ha), 5818 (A, Ha), 8129 (A, B, F--719807, K, N, S); León 14940 (Ha, N). Matanzas: Acuffa 15372 (Es); Britton, Britton, & Wilson 14062 (N); León 13375 (Y). Oriente: Acuffa 17183 (Es), 17884 (Es, Es); Ekman 2329 (B, S), 4855 (S), 5923 (B, S), 7476 (S); León 15719 (Ha, N, N), 18151 (Ha, N, N); León & Alain 17965b (Ha). Pinar del Río: Acuffa & Roig 16617 (Es, N); Alain A.1673 (N); Ekman 12926 (B, S). Province undetermined: Sagra s.n. (B, F--998439); C. Wright 261 [Herb. Sauvalle 1788] (Hv, Hv), 3180 [Retiro, 1860--1864; Herb. Sauvalle 1788] (B, Bm, Cb, E--116121, G, Hv, K, Os, P, Pa, S, V, X). ISLA DE PINOS: Britton, Britton, & Wilson 15074 (F--459568, N); Ekman 12337 (B, S).

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